Non-Discretionary Project Results For FY 1998

Project 93-037-01: Technical Assistance with Life Cycle Modeling - Paulsen Environmental Research

BPA Contact: Jim Geiselman

FY 99 Forecast: $175,000

FY98 Funding: $175,000

Project Requirements:
This contract is with Charles Paulsen and provides ongoing independent scientific support for statistical and life-cycle analyses for BPA's participation in the PATH process and in consultation processes for ESA listed species. Analyses are used to help distinguish among competing hypotheses on wild fish survival in relationship to hydro passage conditions, habitat quality, hatchery releases, harvest and ocean conditions. In addition, the contract provides assistance in the development of methods and analyses needed to identify information that can be obtained from adaptive management actions and associated monitoring activities to address the high levels of uncertainty in the effectiveness of alternative management actions. The contract helps ensure that results are communicated effectively to regional specialists and decision managers. The contract includes a subcontract for $30,000 with Beak Consultants for support in data research, synthesis, and documentation. Direct participation is provided in PATH working groups and through the development and review of working group products.

Objectives:
Collect data and perform analyses to help distinguish among hypotheses regarding past effects of hydro operations and habitat conditions. Develop methods to monitor effects of future hydro, habitat, hatchery, and harvest management actions, and to distinguish those effects from naturally occurring variations in climate and other non-management factors.

Tasks for FY98:
Task 1. Spring-summer chinook: improve retrospective models of habitat, hatchery, and hydro effects as needed for decisions in each of area of concern to managers.
Task 2. Fall chinook: develop models to assess the past effects of stressors on fall chinook (assumes that fall chinook run reconstruction is completed in FY97). Begin assessment of potential future effects of management actions on fall chinook (prospective analysis).
Task 3. Steelhead: Complete model design and analysis of past effects of stressors on steelhead. Begin analysis of the effects of future management actions on steelhead
Task 4. Participation in related working groups and review processes

FY98 Accomplishments through July 1998:

Research reports: (all under Objective 1)
"Testing the Hypothesis that Extra Mortality of Wild Snake River Spring/Summer Chinook Varies with the Releases of Snake River Hatchery Fish," June, 1998 (with Richard Hinrichsen). This report demonstrates a negative relationship between smolt releases and wild chinook survival, after accounting for the effects of dams, transportation, and density-dependent mortality.
"Snake River Chinook Parr-Smolt Survival And Habitat Quality Indices," June, 1998. Shows a strong statistical relationship between two different indices of habitat quality (road density and vegetation/land management) and overwintering survival of PIT tagged wild chinook parr.
Comments and extensions of PATH analyses:
"Weighting and sensitivity analysis difficulties with an unbalanced design ," April, 1998 (with Richard Hinrichsen). (Objectives 1 and 2). Suggests problems with PATH analysis of "critical" uncertainties, and methods to improve them.
"Testing the Hydro-Related Extra Mortality Hypothesis," June, 1998 (with Richard Hinrichsen). (Objective 1). Demonstrates that there is almost no relationship between inriver mortality and post-hydrosystem mortality, as postulated for many PATH retrospective and prospective analyses.
"An Empirical Approach to Identifying and Weighting Critical Uncertainties," April, 1998 (with Al Giorgi and Jim Anderson. (Objective 1). Points up additional tests (see above) for hypotheses developed under PATH, and their potential implications for prospective analyses.
"Snake River spring-summer chinook survival and habitat Quality: Current BSM Implementation and Additional habitat hypotheses," June, 1998. (Objective 1). Critique of methods by which habitat enhancement are incorporated into current PATH analyses.
"Observations regarding the Steelhead SAR analysis," March, 1998 (with Al Giorgi). (Objective 3). Outlines potential problems with Raymond et al's estimates of steelhead smolt-to-adult (SAR) estimates in setting standards for Snake River steelhead persistence and recovery.

Work Group participation (Objective 4):
October 1997 workshop. Presented results of preliminary hatchery-wild smolt interaction.
Member of Weight-of-evidence (WOE) group.
Numerous written submissions included in PATH products (see previous section).